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COUNTRY ANALYSIS BRIEFS

Vietnam

Last Updated: May 2006

Background

Vietnam's real gross domestic product grew by 8.4 percent in 2005.

Vietnam's economy has expanded rapidly in recent years, with its real gross domestic product (GDP) growing 7.7% in 2004 and 8.4% in 2005. Growth is forecast at 8.0% in 2006. Vietnam has had Normal Trade Relations status with the United States since late 2001, with 2002 marking the first time Vietnam shipped more goods to the United States than to Japan. Despite rising exports, Vietnam currently runs a slight trade deficit, but is projected to begin having trade surpluses by 2007.

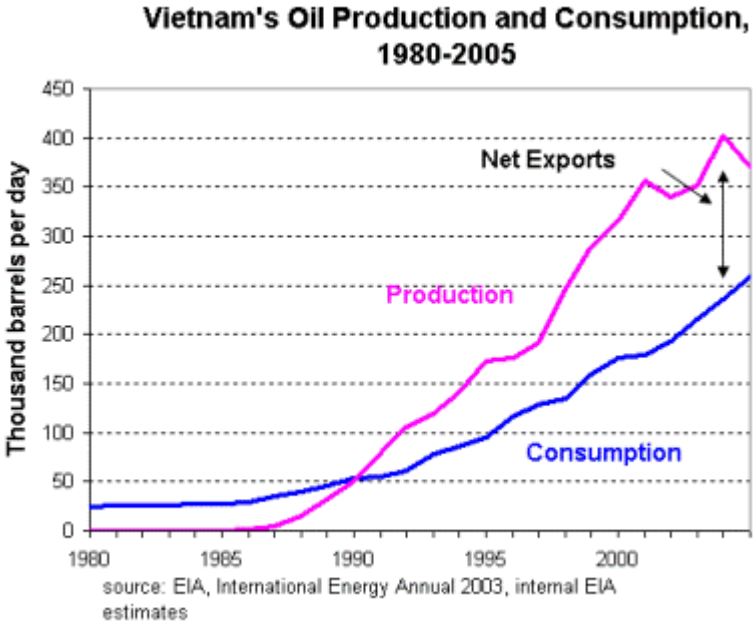
Much of Vietnam's large rural population relies heavily on *non-commercial* biomass energy sources such as wood, dung, and rice husks. As a result, Vietnam's per capita *commercial* energy consumption ranks among the lowest in Asia. The country's commercial energy consumption is predicted to rise in coming years, primarily due to increases in the use of natural gas.

Vietnam claims ownership of a portion of the potentially hydrocarbon rich Spratly Islands, as do the Philippines, Brunei, Malaysia, China, and Taiwan. Vietnam, China, and the Philippines agreed in March 2005 to conduct a joint seismic survey for potential oil and natural gas reserves in a portion of the disputed area. Vietnam also claims the Paracel Islands, which China first occupied in 1974.

Oil

Vietnam's oil production fell slightly in 2005, after several years of steady increases.

Vietnam has 600 million barrels of proven oil reserves, according to data from *Oil and Gas Journal*, but that total is likely to increase as exploration continues. Crude oil production averaged 370,000 barrels per day (bbl/d) in 2005, down somewhat from the 403,000 bbl/d level achieved in 2004. Bach Ho (White Tiger), Rang Dong (Dawn), Hang Ngoc, Dai Hung (Big Bear), and Su Tu Den (Ruby) are the largest oil producing fields in the country. Although it is a significant oil producer, Vietnam remains reliant on imports of petroleum products due to a lack of refining capacity. Overall, Vietnam had net exports of 111,000 bbl/d of oil in 2005. Most of Vietnam's crude oil is exported to refiners in Japan, Singapore, and South Korea.



Vietnam's largest oil producer is Vietsovpetro (VSP), a joint venture (JV) between PetroVietnam and Zarubezhneft of Russia. VSP operates Vietnam's largest oil field, Bach Ho. Other foreign partners include ConocoPhillips, BP, Petronas, and Talisman Energy.

Following the October 2003 commencement of drilling operations in the Su Tu Den (Black Lion) crude field, PetroVietnam reported increasing production volumes. PetroVietnam's April 2003 discovery of an oil deposit in Dai Hung, estimated to have a capacity of 6,300 bbl/d, was expected to further increase Vietnamese production. The decline in production overall from 2004 to 2005 was primarily the result of declining production at the Bach Ho field.

The planned development of several new oil fields in coming years is expected to increase Vietnamese production. A new well at Block 15-1's Su Tu Trang (White Lion) field flowed 8,682 bbl/d in early 2004 and is scheduled to be developed by 2008. In October 2004, Japanese oil companies Nippon Oil Exploration (35 percent interest), Idemitsu Kosan (35 percent), and Teikoku Oil (30 percent) announced plans to fund the development of Blocks 05.1b and 05.1c in the Nam Con Son Basin. Two months later, the Korean National Oil Corporation (KNOC), along with several Korean partners, finalized terms for the $300 million development of Block 11-2, which includes the Flying Orchid Field. PetroVietnam has a 25 percent interest in the joint venture.

Exploration in Vietnam continues to yield new discoveries. In 2002, large oil and gas deposits were discovered in the Ca Ngu Vang (Golden Tuna) and Voi Trang (White Elephant) fields. SOCO Vietnam estimates that its Ca Ngu Vang well may contain up to 250 million barrels of oil. In July 2004, VSP discovered new stocks of oil in its Dragon field. Three months later, a joint venture comprised of American Technologies, Petronas, Singapore Petroleum, and PetroVietnam announced a 100-million-barrel oil discovery off Vietnam's northeast coast.

In September 2004, the Vietnamese government offered nine exploration blocks in the Phu Khanh

basin off its southern coast. In November 2004, Japanese oil companies Nippon Oil Exploration, Idemitsu Kosan, and Teikoku Oil signed an agreement to explore in two offshore blocks southeast of Ho Chi Minh City. They plan to drill a test well in 2006 and complete exploration by 2007. In December 2004, Talisman Energy was awarded the right to conduct exploration in the Cuu Long Basin, and received additional acreage in an adjacent area in April 2005. ONGC of India was awarded drilling rights in the deepwater Block 127 in the Phu Khanh Basinoff Vietnam's central coast in October 2005. ChevronTexaco also received acreage in the Phu Khanh Basin in the most recent round of awards, with an award for Block 122 in October 2005.

PetroVietnam's storage and transportation division, Petrolimex, recently completed a new oil storage facility in the central Khanh Hoa province. The depot is largest in the country, with a total storage capacity of 3.68 million barrels.

Refining

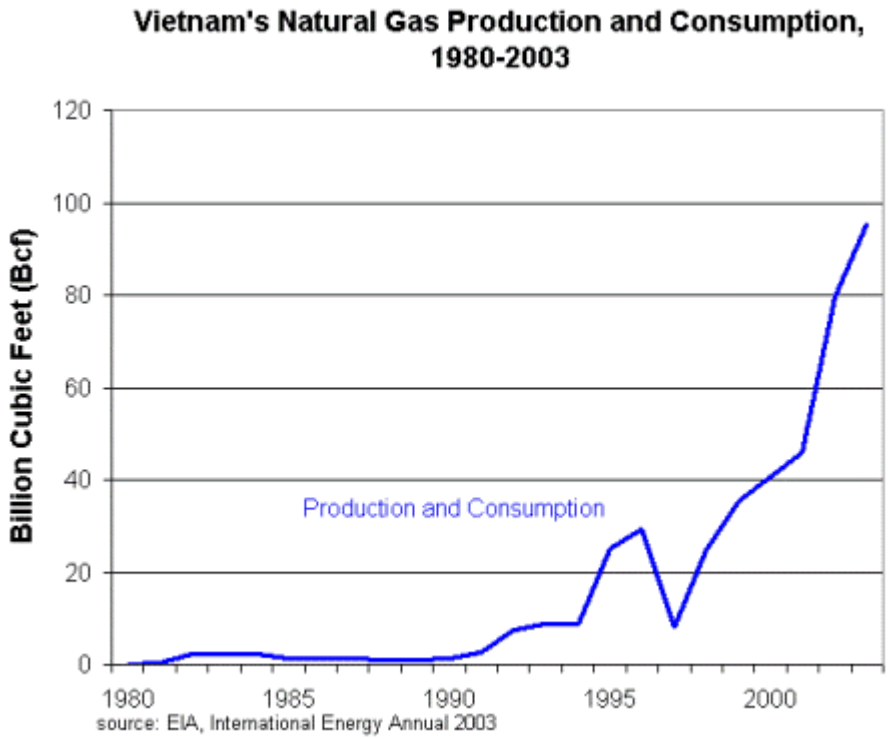
Vietnam is in the process of building its first refinery. The $1.5 billion Dung Quat Refinery, located in Quang Ngai province, will have a crude distillation capacity of approximately 140,000 bbl/d. After several years of delays in financing the project, construction finally began in November 2005. Commercial operation of the refinery is expected to begin in early 2009. Vietnam's distribution infrastructure is discontinuous, with the north and south of the country functioning largely as separate markets. Completion of the Dung Quat Refinery, located in the center of the country, should lead to greater interaction between the regions.

A second refinery project is under consideration at Nghi Son, north of Hanoi in the Thanh Hoa province. The Vietnamese government has estimated the 150,000 bbl/d plant will cost $3 billion. In August 2004, Mitsubishi Corporation agreed to participate in building Nghi Son for completion in 2010. In December 2004, Vietnam contracted the International Business Company (IBC) of the British Virgin Islands to conduct a feasibility study for a third oil refinery, to be located at Vung Ro in the southern Phu Yen province. The Vietnamese government hopes to complete the refinery within 12 years.

Natural Gas

Natural gas production has been increasing rapidly in Vietnam since the late 1990s.

Vietnam has proven gas reserves of 6.8 trillion cubic feet (Tcf), according to *Oil and Gas Journal*. Vietnam's natural gas production and consumption have been rising rapidly since the late 1990s, with further increases expected as additional fields come onstream. Natural gas is currently produced entirely for domestic consumption. The Cuu Long basin offshore from the Mekong Delta in southern Vietnam, a source of associated gas from oil production, is the largest Vietnamese natural gas production area.



Only two fields in Vietnam have been developed specifically for their natural gas potential: Tien Hai, with a potential output of 1.76 million cubic feet per day (Mmcf/d); and Lan Tay/Lan Do of Nam Con Son, which began producing over 5 Mmcf/d in 2002. In the Nam Con Son Basin, a $565 million, 230-mile pipeline was completed in June 2002 connecting the Lan Tay and Lan Do fields to the mainland at Vung Tau. The Nam Con Son project consists of five subsea wells linked to a production platform and a pipeline leading to an onshore treatment plant. Gas is piped to three generating plants at the Phu My industrial complex, where electricity is provided primarily to areas surrounding Ho Chi Minh City. In December 2004, the Vietnamese government announced that output from Nam Con Son was expected to reach 88 billion cubic feet (Bcf), exceeding planned production by 90%. The project currently supplies the Phu My 1, Phu My 3, Phu My 2.1 power plants and the extended Phu My 2.1 plant. Phu My 2.2 will begin using output from the field soon thereafter.

In December 2002, a consortium headed by Korea National Oil Corporation (KNOC) signed an agreement to install facilities to pump and supply 130 Mmcf/d of natural gas to Vietnam. The natural gas, located in the Rong Doi and Rong Doi Tay fields on Block 11-2 of the Nam Con Son Basin, is sold to PetroVietnam under a 23-year contract. PetroVietnam resells most this volume to Electricity of Vietnam (EVN). Production at the fields began in mid-2005. In December 2004, KNOC and PetroVietnam signed agreements to further exploit natural gas in both Blocks 11 and 12. Construction of an additional pipeline to bring ashore natural gas from block 11 began in October 2005, and is scheduled for completion in October 2006.

The Su Tu Den and Rang Dong oil fields, both of which have considerable Vietnamese reserves of associated natural gas, are located near the 62-mile pipeline from the Bach Ho field. An estimated 60 Mmcf/d of gas from the fields is earmarked for consumption in power plants in southern Vietnam.

Both TotalFinaElf and ChevronTexaco (originally Unocal) have found natural gas in exploratory drilling of the Malay basin. Additionally, Talisman Energy has found natural gas at the Cai Nuoc field in block 46. The discovery is close to block PM-3-CAA, which straddles the maritime border with Malaysia, and is expected to contain up to 100 Bcf of recoverable gas reserves.

A contract was awarded to McDermott International in March 2006 for construction of a 200-mile pipeline, which will transport natural gas from the PM3-CAA block to Ca Mau province in southern

Vietnam. It is scheduled for completion in 2007.

In December 2004, PetroVietnam announced that it was reconsidering the $70 million Phu My gas pipeline project from Phu My to Nhon Trach due to increased expenses associated with land costs in compensation areas. The pipeline was initially planned to transport associated gas from the Bach Ho and Rong fields for power generation.

Coal

Coal is a modest, but growing, part of Vietnam's energy mix.

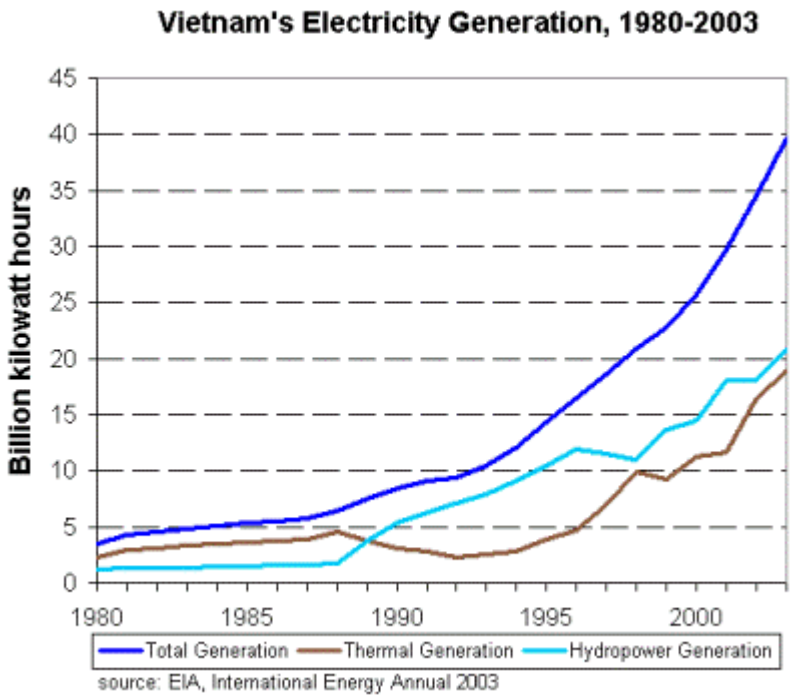
Vietnam contains coal reserves estimated at 165 million short tons (Mmst), the majority of which is anthracite. Production has increased dramatically over the last decade, with Vietnam producing over 18 Mmst in 2003. As a result, Vietnam exported a record 7 Mmst of coal, primarily to Japan and China, in 2003. Although Vietnam has historically relied on hydropower for electricity, it has recently promoted the construction of coal-fired power plants. Vinocoal plans to build eight coal-fueled thermal power plants with a total capacity of 2,900 MW by 2010. Six are currently in various stages of planning and construction. In December 2004, the Vietnamese government approved Vinacoal's proposal to invest in a 200-MW, coal-fired thermal power plant in the Son Dong district. The plant is scheduled to begin operation in 2007. Coal-fired power plants are expected to eventually account for 25% of Vietnam's total electricity production. The Vietnamese government estimates that 10.2 Mmst of coal is needed per year to meet increasing domestic demand, projected at 20,000 MW by 2010.

Vietnam continues to exploit new coal reserves within its borders. In March 2003, a significant coal bed was discovered in the Red River Delta region of northern Vietnam. Vinacoal plans to use the reserve for thermal power plants. In October 2004, Vinacoal entered talks with China's Fujian Province Coal Industry Corporation to jointly exploit the Bac Coc Sau mine in the Quang Ninh province.

Electricity

Electricity demand in Vietnam is growing at around 15 percent per year.

Although Vietnam's per capita electricity consumption is among the lowest in Asia, demand has risen in recent years, straining the country's limited generating capacity. Rapid commercial sector growth, population migration to major cities, and elevated living standards have all contributed to a growing demand for electricity. In 2003, Vietnam had a total electric generating capacity of 8.8 gigawatts (GW) and generated 39.7 billion kilowatthours (kWh) of electricity, of which 52 percent was hydropower.



Electricity demand in Vietnam is forecast to grow 15 percent per year until 2010. Vietnam currently buys power from China to prevent shortages in the North, and plans to begin purchasing from Laos in 2008.

The majority of thermal electricity generation in Vietnam depends on coal-fired plants, though natural gas use is expanding. EVN's Pha Lai is the largest coal-fired power project in Vietnam, with the second of two 300-MW units coming into service in 2003. In order to meet increased demand, construction or expansion is planned for 32 power stations (7,547 MW) before 2010. The state power company, Eléctricité of Vietnam (EVN), plans to commission 16 hydropower plants by 2010 and increased capacity at the Uong Bi coal-fired plant to 400 MW in 2005. Vinacoal also has plans to construct eight additional coal-fired power plants.

Vietnam currently has five hydroelectric expansions underway. The country's Son La project, which began construction in late 2005, is anticipated to have a generating capacity of 2,400 MW by 2012, will be the largest hydroelectric project in Vietnam when completed. In September 2004, construction began on the Ban Ve hydroelectric power plant, expected to begin operations in 2008. EVN began work on four additional hydroelectric projects in late 2004. The Dong Nai 3 and Dong Nai 4, both located in the Central Highlands region, are expected to be completed within four years and to provide approximately 520 MW of generating capacity. In December 2004, EVN began construction of the Se San 4 hydropower plant in the central highlands provinces of Gia Lai and Kon Tum. The plant is anticipated to have a capacity of 330 MW and to generate 1,390 million kWh per year. Vietnam also plans to build three additional plants in the region before 2010.

In March 2004, EVN announced plans to spend $1.3 billion to build and refurbish power plants with a combined capacity of 1,510 MW. The projects include the combined cycle power plant Phu My 2.1, the hydroelectric facility Can Don, the Phu My 3 and Phu My 4 thermal plants, and Na Duong. Additional projects include the Song Ba Ha, Bac Binh, Se San 4, Dong Nai 3 and Dong Nai 4 hydrostations, the Quang Ninh, Ninh Binh extension, and the O Mon 600-MW thermal plant.

The development of natural gas-fired plants in the Phu My complex of the Ba Ria-Vung Tau province has helped to offset Vietnam's heavy reliance on hydropower, which can be vulnerable to disruption when monsoon rainfall is unusually low. In March 2003, the 720-MW Phu My 3 power plant commenced operations. The $450 million plant, owned by a consortium led by UK's BP, was Vietnam's first foreign-invested, build-operate-transfer (BOT) project. EVN has contracted to purchase the output under a 20-year power purchase agreement. Mitsubishi received an award in February 2006 for the construction of a 330-MW natural gas-fired power plant in the southern Mekong delta. The plant will come online in early 2009, running initially on fuel oil, and switching to natural gas when pipeline infrastructure is completed.

More foreign companies are beginning to enter the growing Vietnamese power market in the form of Build-Operate-Transfer (BOT) projects. EVN and a consortium including Tokyo Electric Power (TEPCO), Sumitomo, and Eléctricité de France (EdF) began BOT construction of the Mekong Delta's 715-MW Phu My 2-2 in January 2003. The plant is fueled by gas from Nam Con Son Basin.

EVN plans to develop a national electricity grid by 2020 by patching together several regional grids. The country's distribution infrastructure is poorly maintained, but has benefited from recent improvements. A North-South power cable transmits electricity from Vietnam's largest generator, the Hoa Binh hydropower plant in the North, to large population centers in the South, linking the country into one electricity grid and helping alleviate electricity shortages in Ho Chi Minh City. The $56 million project was funded by the World Bank. Vietnam is considering the construction of a 500-KV, 188-mile power line from Pleiku to Danang city at a cost of $130 million. The Vietnamese government has estimated that an additional 9,300 miles of high voltage transmission lines and 173,600 miles of medium and low voltage transmission lines will be necessary to accommodate new capacity by 2010. In September 2004, EVN announced plans to invest $330 million over five years to upgrade transmission lines surrounding Hanoi.

Vietnam plans to complete its first nuclear power plant by 2020 as an alternate means on meeting demand. In December 2004, the Vietnamese Ministry of Science and Technology submitted a pre-feasibility study for the 2,000-MW nuclear plant to the National Assembly.

Profile

Country Overview

Chief of State	President Tran Duc LUONG
Head of Government	Prime Minister Phan Van KHAI
Location	Southeastern Asia, bordering the Gulf of Thailand, Gulf of Tonkin, and South China Sea, alongside China, Laos, and Cambodia
Independence	2 September 1945 (declared independence from France, achieved 1954)
Population (2005E)	83,535,576
Languages	Vietnamese (official), English (increasingly favored as a second language), some French, Chinese, and Khmer; mountain area languages (Mon-Khmer and Malayo-Polynesian)
Religion	Buddhist 9.3%, Catholic 6.7%, Hoa Hao 1.5%, Cao Dai 1.1%, Protestant 0.5%, Muslim 0.1%, none 80.8% (1999 census)
Ethnic Group(s)	Kinh (Viet) 86.2%, Tay 1.9%, Thai 1.7%, Muong 1.5%, Khome 1.4%, Hoa 1.1%, Nun 1.1%, Hmong 1%, others 4.1% (1999 census)

Economic Overview

Currency/Exchange Rate (4/2/2006)	1 US Dollar = 16,603.0 Vietnamese Dong
Inflation Rate (2005E)	8.2%
Gross Domestic Product (GDP, 2005E)	$52.4 billion
Real GDP Growth Rate (2005E)	8.4%
Exports (2005E)	$31.6 billion
Exports - Commodities	crude oil, marine products, rice, coffee, rubber, tea, garments, shoes
Exports - Partners (2004E)	US 19.8%, Japan 13.7%, China 8.4%, Australia 7%, Germany 5.7%, Singapore 4.8%, UK 4.6%
Imports (2005E)	$32.8 billion
Imports - Commodities	machinery and equipment, petroleum products, fertilizer, steel products, raw cotton, grain, cement, motorcycles
Imports - Partners (2004E)	China 13.6%, Japan 11.5%, Singapore 11.5%, Taiwan 10.2%, South Korea 9.8%, Thailand 6.7%, Hong Kong 4.4%, US 4.1%, Malaysia 4.1%
Current Account Balance (2005E)	-$2.3 billion

Energy Overview

Minister of Industry	Dr. Dang Vu Chu
Proven Oil Reserves (January 1, 2006E)	0.6 billion barrels
Oil Production (2005E)	366.4 thousand barrels per day, of which 100% was crude oil.
Oil Consumption (2005E)	259.4 thousand barrels per day
Net Oil Exports	67.0 thousand barrels per day
Crude Oil Distillation Capacity (2006E)	None
Proven Natural Gas Reserves (January 1, 2006E)	6.8 trillion cubic feet
Natural Gas Production (2003E)	0.1 trillion cubic feet
Natural Gas Consumption (2003E)	95.4 billion cubic feet
Recoverable Coal Reserves (2003E)	165.3 million short tons
Coal Production (2003E)	17.6 million short tons

Coal Consumption (2003E)	10.4 million short tons
Electricity Installed Capacity (2003E)	8.7 gigawatts
Electricity Production (2003E)	39.7 billion kilowatt hours
Electricity Consumption (2003E)	36.9 billion kilowatt hours
Total Energy Consumption (2003E)	1 quadrillion Btus*, of which Oil (46%), Coal (22%), Hydroelectricity (22%), Natural Gas (10%), Nuclear (0%), Other Renewables (0%)
Total Per Capita Energy Consumption (2003E)	12.1 million Btus
Energy Intensity (2003E)	5,148.3 Btu per $2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2003E)	61.1 million metric tons, of which Oil (54%), Coal (36%), Natural Gas (10%)
Per-Capita, Energy-Related Carbon Dioxide Emissions (2003E)	0.8 metric tons
Carbon Dioxide Intensity (2003E)	0.3 Metric tons per thousand $2000-PPP**
Environmental Issues	logging and slash-and-burn agricultural practices contribute to deforestation and soil degradation; water pollution and overfishing threaten marine life populations; groundwater contamination limits potable water supply; growing urban industrialization and population migration are rapidly degrading environment in Hanoi and Ho Chi Minh City
Major Environmental Agreements	party to: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Ship Pollution, Wetlands signed, but not ratified: none of the selected agreements

Oil and Gas Industry

Organization	State-owned PetroVietnam reports to the Industry Ministry after a May 2003 reorganization that removed PetroVietnam's independent ministerial ranking. The company was reorganized in 1990 and now oversees the activities of eight subsidiaries that control functions such as administration, exploration and production, marketing (PetroVietnam Processing and Distribution Company (PVPDC)), training, gas production and distribution (Vietgas), petrochemicals, and information collection.
Foreign Company Involvement	BHP, BP, Conoco, Enterprise, Fina, Idemitsu, IPL, Japan National Oil, Mitsubishi, Mobil, Nexen, OMV, Occidental, Pedco, PetroCanada, Petronas Carigali, Statoil, Sumitomo, TotalFina

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.
**GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

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